

The New York Mountain populations occur near Barnwell and in Keystone Canyon. Near Barnwell, at about 1500 m elevation, the topographic mosaic includes flat or gently tilted stony plains broken by ridges, washes, and their rocky slopes. The stony plains support a sparse "grassland" (5% cover) dominated by *Hilaria jamesii*, and sometimes *Gutierrezia microcephala*. The rocky slopes have less *Hilaria* and *Gutierrezia* but also include a sparse overstory (2% cover) of *Yucca brevifolia*, *Yucca baccata*, and *Juniperus osteosperma*. Plants of *P. acanthoclada* characteristically occur at the edges of the stony plains or along small washes and on rocky slopes.

In Keystone Canyon, *P. acanthoclada* occurs on steep, rocky slopes at an elevation of about 1708 m in a pinyon woodland about equally co-dominated by *Pinus monophylla*, *Juniperus osteosperma*, and *Quercus turbinella*. Plants of *P. acanthoclada* occur mostly in grassy openings among the trees and large shrubs.

In southern Nevada, *P. acanthoclada* is reported from Ash Meadows in Nye Co. (*J. C. and A. R. Roos 6144*), where it grows on alkali flats with *Chrysothamnus albidus* and *Atriplex confertifolia* at an elevation of 695 m.

Polygala habitats at Lucerne Valley, Cottonwood Spring, Barnwell, Keystone Canyon, and Ash Meadows are quite different from one another in terms of slope, substrate, vegetation density, and associated species. Consequently, knowledge of one habitat or locality does not help predict where other localities might be. Plants of *Polygala acanthoclada* are relatively few and inconspicuous. They are seldom collected, despite their highly accessible locations along well-traveled roads. Because of the apparent non-specificity of its habitat, *Polygala acanthoclada* may yet be found in other Mojave Desert localities.—FRANK C. VASEK and ANDREW C. SANDERS, Dept. of Botany and Plant Sciences, Univ. California, Riverside 92521. (Received 28 Dec 1981; revision accepted 6 Jul 1982.)

JACKRABBIT HERBIVORY AND CREOSOTE BUSH (*Larrea*) REPRODUCTION.—Jackrabbits (*Lepus californicus*) evidently trim branches from the creosote bush, *Larrea tridentata* (D.C.) Cov. (Jaeger, *J. Mammal.* 19:187–188. 1948; Vorhies and Taylor, *Univ. Arizona Agr. Exp. Sta. Techn. Bull. No. 49:471–587.* 1933) but reports vary as to whether plant parts are actually ingested by the animals (Jaeger 1948; Hayden, *J. Mammal.* 47:42–46. 1966; Chew and Chew, *Ecol. Monogr.* 40:1–21. 1970).

Trimmed *Larrea* branches were observed lying at the bases of the shrubs during a recent study of Mojave Desert creosote bush (Boyd, M.S. thesis, Calif. State Polytechnic Univ., Pomona. 1979) near Barstow, California. Damage to the cut branches was detected only during flower production, when I observed that many of the flower buds had been eaten. This note reports my attempts to answer two questions regarding the observed browsing of *Larrea*: 1) Was *Lepus californicus* responsible for the damage? 2) Did the loss of reproductive units (flower buds, flowers, immature fruits) significantly decrease the reproductive output of creosote bush?

I established a 43 × 47.5 m quadrat within a relatively undisturbed *Larrea-Ambrosia* community (see Boyd 1979 for study site details). The pruned branches lying around each shrub were collected every 2–3 weeks from early April 1979 until mericarp dispersal began (late June 1979). I counted the number of cut pedicels and intact reproductive units on each branch. To determine whether the proportion of cut pedicels on the cut branches was different from that on unpruned branches, I removed one branch higher than 1.5 m above the ground from each of ten shrubs. The number of reproductive units was counted in the same way as with the pruned branches. Because the size of the animal pruning the branches is reflected in the heights of the cut branches, I measured the vertical distance from 773 freshly cut branches to the soil surface.

Although jackrabbits were not seen browsing *Larrea* shrubs on the site, two indirect lines of evidence point to their being responsible for the pruning. First, branches up to 5 mm thick were found cleanly sliced through. Examination of a mammal species list compiled for the site (Boyd 1979) reveals that *L. californicus* is the only browsing mammal present that has the jaw strength necessary to cut through a branch that thick. Second, the mean height of the cut branches was 52.5 ± 10.0 cm (S.D.), with a maximum height of 90 cm. Again, the only browsing mammal present of the appropriate size is *L. californicus*.

Pruned branches suffered a much greater loss of reproductive units than branches beyond reach of the rabbits. Of 863 reproductive units on the branches taken from heights greater than 1.5 m, only 0.35% had been destroyed. In contrast, branches gathered from the ground around the shrubs on the same day the high ones were collected had lost 84% of the 3708 reproductive units present.

Of the total number of reproductive units on the browsed branches (14,570), 89.4% were eaten by the rabbits. The average loss per shrub was 164 ± 245 (S.D.) reproductive units. The large standard deviation reflects the fact that a few shrubs lost no reproductive units while others lost up to 1220 during the monitored period.

Does the rabbit browsing significantly decrease the reproductive output of a *Larrea* population? Each shrub initiated an average of 5086 reproductive units (Boyd 1979). As the direct loss to jackrabbits is only 3.3% of this total, jackrabbit browsing causes a negligible reduction in the reproductive output of this *Larrea* population.

Although the direct loss is small, the pruning may indirectly affect *Larrea* reproduction. Loss of plant biomass can decrease reproductive output by way of resource limitation (Stephenson, Ecology 61:57-64. 1980). Of the 5086 reproductive units produced per shrub, 17% turned brown and died due to no apparent cause (Boyd 1979). These flower buds may have been aborted by resource limitation caused by the pruning activities of the jackrabbits. If so, the total loss of reproductive output caused by *L. californicus* may be large enough to affect *Larrea* reproduction.—ROBERT S. BOYD, Dept. of Botany, Univ. California, Davis 95616. (Received 8 Mar 1982; revision accepted 23 Aug 1982.)